

## Title (en)

A non-invasive method and apparatus for measuring blood chemical concentration.

## Title (de)

Verfahren und Gerät zur nichtinvasiven Messung des Gehaltes eines chemischen Stoffes im Blut.

## Title (fr)

Méthode et appareil de mesure non invasive de la concentration d'une substance chimique dans le sang.

## Publication

**EP 0426358 A1 19910508 (EN)**

## Application

**EP 90311596 A 19901023**

## Priority

- KR 890015584 A 19891028
- KR 900011241 A 19900724

## Abstract (en)

A method and apparatus for measuring blood glucose concentration by irradiating blood vessels with electromagnetic radiation using near-infrared radiation diffuse-reflection laser spectroscopy. This invention uses electromagnetic radiation of a wavelength that is transmitted through the skin to the measurement part, for example, a blood vessel. Since skin is mostly composed of water (H<sub>2</sub>O), which absorbs IR radiation in nearly the entire IR spectral range, only radiation of a certain, narrow portion of the IR spectral range called the "water transmission window" is transmitted through the skin. The present invention uses electromagnetic radiation with a wavelength of 1.3  $\mu$ m SIMILAR 1.9  $\mu$ m radiation from a semiconductor diode laser (5). When electromagnetic radiation of these wavelengths irradiates the skin, light is transmitted through the skin to the blood vessel where the light interacts with the heterogeneous components of the blood. The light which reaches the blood is then diffusely reflected by the blood. The reflected light will have been modulated by the characteristic vibrations of the molecules which are major components of blood. The reflected light is detected and provided as a digital signal to a one-chip microcomputer (2). The one-chip microcomputer (2) calculates a blood glucose concentration from the digital signal by reference to a calibration curve stored in the memory of the one-chip microcomputer (2). The one-chip microcomputer (2) causes the calculated blood glucose concentration to be displayed on a digital display (3).

## IPC 1-7

**A61B 5/00**

## IPC 8 full level

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## Citation (search report)

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